IN THE CLAIMS:

Please amend the claims, as follows:

Claim 1 (currently amended): A system for optimizing the performance of a stepper motor by optimizing step-time sequence instructions given to the stepper motor, the system comprising:

a host computer having a user interface for entering commands to the stepper motor and defining a desired operation profile used to create initial step time sequence instructions; and

an interface computer connected between the host computer and the stepper motor having program means for executing a real-time controller program which receives real-time feedback from the stepper motor to obtain a measured operation profile for mathematically obtaining an objective function value indicative of a correspondence between the measured and the desired operation profile, and modifying the initial step time sequence instructions to produce optimized step time sequence instructions, so that the measured operation profile is modified to approach the desired operation profile, until the interface computer obtains a low objective function value indicative of an acceptable degree of correspondence between the measured and the desired operation profile, the interface computer transmitting the optimized step-time sequence instructions to the stepper motor.

Claim 2 (original): The system of claim 1, further comprising feedback means connected with the stepper motor for providing real-time feedback to the interface computer.

Claim 3 (original): The system of claim 1, wherein the optimized step-time sequence instructions are transmitted to the stepper motor in real-time.

Claim 4 (original): The system of claim 1, wherein the objective function is modified by the real-time feedback when the real-time controller program executes.

Claim 5 (currently amended): An optimization system for a stepper motor, comprising:

a host computer for entering stepper motor commands defining a desired operation profile;

an interface computer connected between the host computer and the stepper motor having program means for determining an objective function value, the program means minimizing the objective function value to improve the dynamic performance of the system using a generated step-time sequence based on the desired operation profile, the program means perturbing each time step, and measuring the operation profile and evaluating the objective function value for each perturbation to optimize the system response, wherein the perturbing, measuring and evaluating steps are repeated until the program means obtains a low objective function value indicative of an acceptable degree of correspondence between the measured and the desired operation profile.

Claim 6 (currently amended): A method for optimizing operation of a stepper motor based on a desired operation profile, the method comprising:

providing an interface computer connected with the stepper motor;

generating an objective function for optimizing a step-time sequence for the stepper

motor;

loading an optimization program including the objective function on the interface computer;

generating an initial step-time sequence for the stepper motor;

receiving, at the interface computer, feedback from hardware on the stepper motor, the feedback containing a measured operation profile;

calculating a difference between the desired and measured operation profile;

applying a mathematical operation to the difference to obtain an objective function value; and

running the optimization program on the interface computer for determining perturbations to the step-time sequence instructions to minimize an objective function value in response to the feedback to generate an optimized step-time sequence, wherein the receiving, calculating applying and running steps are repeated until the program means obtains a low objective function value indicative of an acceptable degree of correspondence between the measured and the desired operation profile.

Claim 7 (previously presented): A method according to claim 6, wherein running of the optimization program includes inputting the objective function value into an algorithm for determining perturbations to the step-time sequence instructions.

Claim 8 (previously presented): A method according to claim 6, wherein the steps of receiving a measured operation profile, calculating a difference between the desired and measured operation profile, applying a mathematical operation to the difference to obtain an objective function value, and running the optimization program are repeated, so that the

objective function value is minimized and the measured operation profile approaches the desired operation profile.

Claim 9 (currently amended): A system for optimizing the performance of a stepper motor by optimizing step-time sequence instructions given to the stepper motor, the system comprising:

a host computer having a user interface for entering commands to the stepper motor and defining a desired operation profile used to create initial step time sequence instructions; and

an interface computer connected between the host computer and the stepper motor having program means for executing a real-time controller program which receives real-time feedback from the stepper motor to obtain a measured operation profile for mathematically obtaining an objective function value which is input into an algorithm for determining perturbations to the step-time sequence instructions, wherein

the perturbations are repeated until a low objective function value indicative of an acceptable degree of correspondence between the measured and the desired operation profile is obtained, and

the real-time controller transmits optimized step time sequence instructions to the motor.

Claim 10 (previously presented): A system according to claim 9, wherein the real-time controller program receives real-time feedback from the stepper motor to repeatedly obtain a measured operation profile for mathematically obtaining on a repeated basis an objective function value which is repeatedly input into an algorithm for repeatedly

determining perturbations to the step-time sequence instructions, wherein the real-time controller transmits optimized step time sequence instructions to the motor.